



Yard and Garden Pest Management

Managing pests is an important part of keeping your lawn, trees, vegetables, and flowers beautiful and productive. Chemical pesticides can be used to control pests, but you should know that pesticides can cause water pollution. In addition, studies have shown that homeowners often apply more pesticides than needed, and they often apply pesticides incorrectly. Traces of pesticides have been found in many urban streams and coastal waters in Hawaii. This worksheet will help you learn the risks of home pesticide use and improve your pest management practices in your lawn and garden.

Pesticide use practices

Using no chemical pesticides and removing weeds, insects, and other pests by hand is safest for the environment and your health. If properly used, however, pesticides pose only a minimal risk. To use chemical pesticides safely, follow these five steps:

- Identify the pest or disease problem and determine the best way to control it.
- If you need a chemical pesticide, **read the label** to make sure that it is the right one for the job
- Apply the pesticide according to the label directions
- Be prepared to deal with accidental poisoning or spills
- Properly store and dispose of leftover pesticides and pesticide containers.

Step 1: Identify the pest or disease problem and the best way to control it

Many plant problems are not caused by insects or disease but are related to temperature extremes, waterlogging or drought, damage caused by lawn mowers, or overuse of chemicals. Poor nutrition can also make your plants more susceptible to pests and disease. The CTAHR-CES Master Gardener Program (on Oahu, call 453-6055) can help you determine if your problem is pest-related. If it is, they can help you decide if you need to spray or if you can control the pest another way. If you need to spray, they can help you choose the right

product. The KnowledgeMaster section of the CTAHR Web page (<<http://www2.hawaii.edu/>>) also provides more information about pest management. For a fee, the CTAHR Agricultural Diagnostic Service Center will also examine a leaf or twig sample, identify the pest or disease problem, and recommend the appropriate control measures. Contact them by phone at 808-956-6706 to find out what part of your plant you should bring in to get their advice and recommendation.

Step 2: Get the right pesticide for the job

If you decide to use a pesticide, you must **read the label** before you apply, store, or dispose of a pesticide. Additional information is provided in CTAHR publication WC-3, *Before you buy or apply an herbicide*, available free on the Web at <<http://www2.ctahr.hawaii.edu/oc/freepubs/pdf/WC-3.pdf>> or by request from your local CES office. The label will tell you the active ingredient in the pesticide and the pests that it will kill. It will also tell you which plants you can use the pesticide on. Different companies sell similar products under different brand names, so double-check that you are buying the right product. If you ask your CES agent or master gardener for advice, they will provide you with the name of the active ingredient you need or with a list of the product or products that will meet your needs.

Some pesticides contain chemicals designed to kill more than one pest; these are called "broad-spectrum" pesticides. Other pesticides have been developed to kill one or a few specific pests; these are called "selective" pesticides. Selective pesticides are best, because broad-spectrum pesticides may kill beneficial insects that help keep your plants healthy by eating other pests.

The pesticide label also provides information on the relative toxicity of the product. Chemicals labeled "CAUTION" have relatively low toxicity. Chemicals labeled "WARNING" have moderate toxicity. Chemicals labeled "DANGER" have high toxicity. The equipment you need to mix and apply the product safely and

effectively will depend on the individual chemical and the toxicity. Make sure that you have the equipment you need before you purchase the pesticide. The label also contains information on first aid, application restrictions, and other hazards.

Labels, however, do not provide all the information you may need. You can ask your pesticide retailer for a copy of the Materials Safety Data Sheet (MSDS) that contains additional information. If you have more questions, ask your pesticide retailer, your local CES agent, or the master gardener program (On Oahu, call 453-6055). You can also obtain information directly from the pesticide manufacturer by calling the toll-free number provided on the label.

Because pesticides can be hazardous, safe and proper disposal of any leftover chemicals can be time-consuming. The best way to avoid this problem is to purchase only the amount you need to address your problem. Purchasing only what you need also means that you also will not have to worry about safely storing pesticides in your home.

Step 3: Apply the pesticide according to label directions

Federal and state law requires that you follow label directions when you use any pesticide. When applied according to label directions, pesticides will not harm your plants or the environment. Improper use may poison you, hurt your plants, and harm the environment.

When and where you apply pesticides also affects the water pollution risk. You want as much of the pesticide as possible to reach the target pest. Apply the pesticide to the appropriate location on the plant or to the soil based on the type of pest. Do not apply pesticides when it is windy or raining or just before watering your plants. If you do not follow this rule, the pesticide can be blown away or washed off and not reach the target pest. Do not to apply pesticides near streams or other water bodies unless absolutely necessary, and only if permitted by the label. Pesticides applied on stream banks or other areas near water can enter the water more easily and cause pollution.

Step 4: Be prepared to deal with accidental poisoning and spills

When you are using any pesticide, you should be prepared in case you or someone else accidentally is exposed to too much of it. Depending on the chemical, pesticides can cause poisoning if they are swallowed,

inhaled, get in someone's eyes, or, for very toxic chemicals, get on someone's skin. Young children, who may not know any better, are at a higher risk for accidental poisoning. The label on the pesticide container will contain basic information on first aid if someone is improperly exposed to the pesticide. If you have additional questions, contact the Poison Control Center at 941-4411 (Oahu) or 1-800-362-3585 (other islands). If the person's health is in immediate danger, call 911.

You should also be prepared to deal with spills. You should follow the "3 Cs" of spill management: Control, Contain and Clean up. First, control the spill and stop more of the pesticide from spilling. Second, keep it from spreading. Then, clean it up according to the directions on the pesticide label or on the Materials Safety Data Sheet. Be sure that you can clean up the spill safely before you try to clean it up. If the spill is putting you or anyone else in danger, or if there is any risk of the spill entering a water body (including a storm drain) or otherwise posing risk to the public, call 911.

Step 5: Properly store and dispose of leftover pesticides and pesticide containers

After you are finished using the pesticide, be sure that you store and dispose of any leftover chemicals and empty pesticide containers according to the directions on the label or MSDS. Pesticides should be stored in their original containers in a dry, well-ventilated, and secure (locked) location. Check the label or MSDS for any specific storage guidelines.

Leftover pesticides that are no longer needed or wanted must be disposed of as hazardous waste. If possible, empty containers should be recycled. However, recycling is often not available for household pesticide containers. So, empty containers should be rinsed three times with water, "triple-rinsed." The rinse water should be disposed of on a vegetated area far from streams or ditches, and the containers should be punctured so they cannot be used again and placed in your household trash for disposal at a licensed facility. Check the label or MSDS for any specific disposal instructions. HAPPI-Home 4, *Managing household hazardous products*, provides additional information on proper storage and disposal practices.

Integrated Pest Management (IPM)

You may want to consider using Integrated Pest Management (IPM) in your yard and garden. IPM is a systematic approach to controlling pests. It focuses on the use of nonchemical controls and the selective use of

Risk Assessment Table for Yard and Garden Pest Management

	Low risk	Moderate risk	High risk	Your risk
Read the label	Always read the label and follow label directions	Sometimes read the label and follow the directions	Seldom or never read the label and follow directions	<input type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Alternative pest control	Never use chemical pesticides; or, carefully use pesticides only when necessary	Seldom use non-chemical controls; use pesticides regularly	Often use broad-spectrum pesticides or fertilizer/herbicide mixtures	<input type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Choice of pesticide	Always identify specific pest and choose selective pesticide	Identify general type of pest; use broad-spectrum pesticides occasionally	Don't identify pest; apply broad spectrum pesticides over and over	<input type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Application practices (A)	Always carefully apply pesticides to the appropriate part of the plant based on the target pest; spray until just wet	Usually apply pesticides to the appropriate part of the plant based on the target pest; spray until dripping	Apply blanket application of pesticide to entire plant without considering target pest; spray until runoff	<input type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Application practices (B)	Never apply pesticides when it is windy or raining	Seldom apply pesticides when it is windy or raining	Do not consider weather conditions when applying pesticides	<input type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Application practices (C)	No pesticides applied within 100 ft of stream or other water body	Few pesticides applied within 100 ft of water body, using small sprayer	Pesticides regularly sprayed within 100 ft of water body	<input type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Accidental poisoning and spills	Always read first aid and clean-up information on the label before using; clean up any spills quickly and safely according to label directions; Poison Control Center number posted by the phone	Know general first aid and keep pesticide container nearby in case I need label information; know where to find Poison Control Center number (front page of phone book)	Don't read first aid or clean-up information on label before using pesticide or cleaning up any spills; don't know where to find Poison Control Center number	<input type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Storage	Pesticides stored in their original packaging in a dry, well ventilated, secure area; or, no pesticides stored.	Pesticides stored in original packaging that is in fair condition in a dry, well ventilated, secure area	Pesticides not stored in original packaging or stored in original packaging that is in poor condition; pesticides stored in an unsecured area	<input type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high
Disposal	Unwanted pesticides used up; empty containers recycled or triple rinsed and disposed of in household trash	Unwanted pesticides disposed as hazardous waste	Unwanted pesticides and used containers not disposed of properly	<input type="checkbox"/> low <input type="checkbox"/> moderate <input type="checkbox"/> high

chemicals when necessary. Weeds can be controlled by hand pulling or hoeing, and bugs can be removed by picking them off vegetables and garden plants. Cleaning up dead leaves and debris removes potential homes to pests. Putting beneficial insects and microorganisms into your garden is another method used to control pests. The KnowledgeMaster section of the CTAHR Website, <<http://www2.ctahr.hawaii.edu>>, provides more information on IPM, and your local extension agent or Master Gardener can also provide more information on how

you can apply IPM principles to your yard and garden management.

Assessing your risks

Complete the risk assessment table above to determine your water pollution risks. For each category, choose the set of practices that best fits your situation. Then, go to page 4 and develop an action plan to minimize water pollution on your land.

Your action plan

Now that you have assessed your management practices, you can take action to change practices that may be causing water pollution. For areas that you identified as high or moderate risk, decide what action you need to take and fill out the Action Plan below.

Write down all your moderate-risk and high-risk activities below	What can you do to reduce the potential risk for water pollution?	Set a target date for action
Samples of action items:		
<i>Don't identify pests, apply broad spectrum pesticides over and over.</i>	<i>Check Knowledge Master Website to identify specific pest problem; purchase appropriate pest-specific pesticide.</i>	<i>One week from today.</i>



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